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REVISION OF THE CONSOLIDATED RESOLUTION R.E.1

Improving bicycle, motorcycle and moped safety

Note by the secretariat

Members of WP.1 will find below a draft recommendation concerning bicycle, motorcycle and moped safety. The part concerning bicycles was prepared by PRI, while the part concerning motorcycles and mopeds was prepared by the small group made up of the United States of America (chair), FEMA, FIM and IMMA. Once adopted by WP.1, the draft will fit into Chapter 6 “Special rules relating to two-wheeled vehicles” of the new structure of R.E.1 (see document ECE/TRANS/WP.1/2005/15/Rev.1).

The parts concerning the technical aspects of motorcycles and mopeds were reviewed by the secretariat on the basis of proposals submitted by PRI (*italics*).

Chapter 6 Special rules relating to two-wheeled vehicles

6.1 Bicycles

The use of the bicycle is developing not just as a means of transport, often as a substitute for a motor vehicle, but also as a leisure activity.

Numerous countries or local authorities are putting in place voluntary policies to promote the use of bicycles with the general aim not only of protecting the environment, in particular in the fight against atmospheric pollution, but also of safeguarding public health.

This category of users is, however, subject to a high number of accidents on the roads due to the fact that, in the absence of special lanes dedicated to them, they have to integrate into the general traffic or even face up to general traffic conditions, for example at intersections. It is important therefore to reinforce the safety of these users through specific measures or infrastructure installations.

6.1.1 Technical aspects

6.1.1.1 Visibility at night (2.1)

In addition to the provisions on the equipment of bicycles contained in the Vienna Convention on Road Traffic of 1968 (Article 33, paragraph 1), the complementary measures below should be taken to improve their visibility at night as well as that of their users:

6.1.1.1.1 Equipment of the bicycle

Without prejudice to existing national legislation concerning normal lighting devices for bicycles, they shall be equipped:

At the front: with a white reflex-reflector.

On the sides: with amber reflectors fixed to the spokes of the wheels or with retroreflective devices showing a continuous circle.

On the pedals: With white, yellow or amber reflectors which allow clear visibility of the movement and identification of the presence of the cyclist.

6.1.1.1.2 Equipment of the cyclist

Cyclists should be recommended to wear light-coloured clothing, supplemented by retroreflective devices worn on their arms and legs to reinforce their visibility and their identification by other road users.

6.1.1.2 Marking of trailers coupled to cycles (2.3)

If a trailer is coupled to a cycle, the trailer must be equipped at the rear with a red reflecting device and also, if the rear lamp of the cycle is hidden by the trailer or is not lit, a red lamp shall be placed on the rear of the trailer.

6.1.2 Special rules

6.1.2.1 Wearing of helmets (3.4)

Users of bicycles should be encouraged to wear a suitable helmet, whether riders or passengers.

6.1.2.2 Safety reflector arm

In order to ensure a protection zone between the cyclist and other road users, it is recommended to equip the bicycle with a device known as a "safety reflector arm".

All the above-mentioned devices should be the object of information or awareness campaigns aimed at users, in particular schoolchildren. Checks should be organized to ensure that cycle equipment conforms to these rules, in particular those relating to lighting and visibility, and sanctions should be envisaged in case of non-conformity.

6.2 Two-wheeled vehicles equipped with a propelling engine

6.2.1 Introduction

The official statistics for road accidents usually show that riders of motorcycles and mopeds are involved in more accidents than other road-user categories. In-depth studies into the causes of these accidents show a variety of reasons for these high figures.

By far the most important cause of accidents is driver and rider error, usually based on a wrong perception of the pre-accident situation. Consistently, such in-depth studies have shown that 60-65% of accidents are caused by the other vehicle violating the motorcyclist's right of way. This everyday experience has led to a very real policy dilemma: the accidents happen to riders but they are often not responsible.

To be effective in reducing motorcycle and moped crashes and related deaths and injuries comprehensive motorcycle and moped safety programmes should be established and supported. In what follows, recommendations are made based on the most successful practices that have been developed over the years. However, none of these suggestions will really have a full effect if there is not a constant dialogue between motorcyclists and road safety experts; for it is this dialogue, which avoids the regrettably common feeling among riders that the victim is being blamed.

The recommendations address those related to the rider and those linked to the road environment. While some recommendations address the vehicle, i.e., motorcycle or moped, these are not addressed in-depth as they are included in other Regulations and Recommendations, and accident studies show that technical causes of accidents are extremely rare and usually due to a lack of maintenance, particularly of the tyres.

6.2.1.1. Rider permits and licensing for mopeds and motorcycles

The permit allows the authorities to control who has access to the road. It also acts as a means of testing whether or not the rider has a sufficient knowledge of the rules of the road and control of the vehicle.

Different strategies for motorcycle licensing have been tried over the years, with mixed success. Detailed accident studies have shown that a key element in creating safe riders is experience. Research has shown that successful completion of a rider-training programme can provide the equivalent of up to six months of riding experience. Such research findings have promoted the increase in the use of phased licensing systems.

The European experience has been that young road users usually progress from a bicycle to a moped and then to a motorcycle or car. In countries where the climate makes two-wheeler riding attractive, mopeds are seen as a special form of bicycle and a first step towards motorised transport. The minimum age for mopeds has therefore been 14 years in such countries and the requirements for obtaining a permit, if indeed one is required at all, have therefore been confined to a theoretical test on the rules of the road.

For motorcycles, the trend has been towards a phased introduction to the more powerful vehicles. Thus, a learner rider in Europe will be restricted to a limited performance motorcycle for the first two years and then allowed to ride a more powerful machine. From the fact that it is experience that counts, it follows that time spent riding/operating the motorcycle and not further testing governs the progress from one category of motorcycle to another. Similarly, some countries allow car drivers to use the car permit to act as a permit for the limited class of motorcycle, on the grounds that such people have experience of using the road. In practice, such riders usually take some form of training to become familiar with the operation of the motorcycle.

The choice of the permit structure for motorcyclists depends on many factors in each country and experience shows that no one solution can be claimed to have a better result than another. The guiding principle should be that specialised training should complement a general safety education and the whole supported by a progressive introduction to more complex and powerful vehicles. Increasingly, this means that the acquisition of a permit has become linked to a system of rider training.

6.2.1.2 Rider training

Initial rider training (pre-licence training) is very important. It should be affordable and accessible. It should be conducted within an agreed syllabus. Where the services of professional instructors are employed they should be qualified to an agreed standard and should always be experienced motorcyclists. The training programme should in addition to teaching relevant machine control

skills, also address hazard awareness and avoidance and the importance of rider attitude and behaviour and its consequences.

The objective of initial rider training should be to give the necessary skills and knowledge to ride safely and responsibly in traffic and not simply to be to obtain a licence. To this end, licence-testing arrangements should seek to evaluate that a rider has acquired the necessary skills and knowledge to ride safely and responsibly.

6.2.1.3 Protective gear

Motorcycle operators and passengers should be encouraged to use the following protective equipment: motorcycle helmets; proper clothing, including gloves, boots, long trousers, and a durable long-sleeved jacket; and eye and face protection.

6.2.1.4 Safety campaigns

Public information campaigns provide an opportunity to educate motorcycle and moped riders, as well as other motorists and road users. Such campaigns should emphasize issues of rider conspicuity and motorist/other road user awareness of motorcycles. These programmes should address: daytime use of motorcycle headlights; brightly coloured clothing and reflective materials for motorcycle riders and motorcycle helmets with high daytime and night time conspicuity; lane positioning of motorcycles to increase vehicle visibility; reasons why motorists do not see motorcycles; and, especially, ways that other motorists and road users can increase their awareness of motorcyclists.

6.2.1.5 Law enforcement

As with other areas of road safety, law enforcement personnel play an important role in motorcycle and moped safety. Enforcement of licensing, impaired driving laws and laws governing motorcycle operation is as important for two-wheeled vehicles as for four-wheeled vehicles. Besides enforcing road safety rules and regulations, law enforcement is important in properly investigating collisions and maintaining a reporting system that documents the occurrence of collisions. Such a reporting system can be used to assist in identifying programmes and policies needed to increase motorcycle and moped safety. Law enforcement can also provide public information and education support for motorcycle and moped safety.

6.2.1.6 Infrastructure

Traffic engineering is a critical element of any crash reduction programme. Road traffic authorities should be aware of the needs of motorcyclists as road users and their particular characteristics and vulnerability. Policies should be developed regarding the design and the placing of road and roadside furniture, such as signs and lights and service covers and markings. Road maintenance and repairs should be undertaken with their effect on powered two wheelers

being appreciated and measures which lessen the consequences of a rider colliding with a crash barrier should be given priority.

The development of comprehensive national strategies to be used by those responsible for road construction and maintenance, which aim to improve the infrastructure for powered two-wheelers, such as that published by the Norwegian road traffic authority, should be promoted.

6.2.2 Recommendations for improving the safety of moped and motorcycle riders are provided below.

6.2.2.1 Rules concerning mopeds

6.2.2.1.1 Technical aspects (3.5)

6.2.2.1.1.1 *Visibility at night*

Without prejudice to existing national legislation on conventional lighting, mopeds shall be equipped with lateral markings consisting of either amber reflex-reflectors or retroreflective material showing a continuous circle on the sidewalls of the tyres.

Proposal submitted by PRI

Without prejudice to existing national legislation on front and rear lighting devices, mopeds shall be equipped with side markings made up of in particular amber-coloured retroreflective devices, visible from the side, fixed on the spokes of the wheels or of white-coloured retroreflective products on the sidewalls of the tyres.

When registration of this category of vehicles is required (which is highly recommended), the registration plate should be retroreflecting.

6.2.2.1.1.2 *Performance*

Modifications of mopeds resulting in a change in their performance and safety of operation shall be prohibited.

Proposal submitted by PRI

- a) *Mopeds shall be constructed in such a manner that the maximum speed allowed by legislation cannot be increased.*
- b) *Modifications of mopeds which have the effect of changing their performance or safe operation shall be forbidden. The use and sale of devices which allow such changes should also be prohibited and provision should also be made for checks and sanctions.*

6.2.2.1.1.3 Trailers

Where trailers are permitted by national legislation:

- (a) Trailers shall be such that the performance of the combination ensures sufficient safety of operation (speed, visibility, braking).
- (b) Trailers coupled to mopeds must be fitted at the rear with a red reflecting device. If the red lamp of the moped is hidden by the trailer and/or its load, a red lamp must be placed on the rear of the trailer.

Proposal submitted by PRI

- a) *Trailers must be made so as to ensure that the behaviour of the combination provides for safety of operation and in particular avoids any risk of turning over or imbalance (speed, visibility, braking, maximum authorized weight, etc.). National legislation should also draw up particular traffic rules to which such combinations could be subjected, in particular traffic restrictions or speed limits.*
- b) *Trailers coupled to mopeds must be equipped at the rear with a red reflecting device.
If the red lamp at the rear of the moped is hidden by the load of the trailer or by the trailer itself, the trailer shall be equipped with a red lamp at the rear.*
- c) *If the moped has a registration number and the corresponding registration plate is hidden by the trailer or its load, a registration plate reproducing the registration number shall be affixed at the rear of the trailer.*

6.2.2.1.2 Rules concerning the use of mopeds (3.5)

- a) Moped drivers should be at least 14 years of age.
- (b) Governments are recommended to promote tuition for moped drivers.

Proposal from PRI

- (c) *The wearing of a helmet approved for both riders and passengers of mopeds should be made obligatory in all circumstances.*
- (b) *The wearing of light-coloured clothing or of reflecting and fluorescent devices on clothing, in particular when driving at night or in reduced visibility, shall be recommended and encouraged.*

6.2.2.1.3 Safety of moped users

Public information safety campaigns should be encouraged as they provide an opportunity to educate moped riders, as well as other motorists and road users. Such campaigns should emphasize issues of rider conspicuity and motorist/other road user awareness of mopeds.

6.2.2.2 Rules concerning motorcycles

6.2.2.2.1 Technical aspects (3.6)

6.2.2.2.1.1 *Visibility*

In addition to the obligatory lighting and light-signalling devices prescribed by the 1968 Convention on Road Traffic:

(a) Motorcycles **should** be equipped with the following additional devices:

- Vehicle-hazard warning signal;
- Front and rear fog lamps;
- Side amber reflex reflectors.

The fitting of such devices should be encouraged and shall be effected in conformity with the relevant requirements of Regulation No. 53 annexed to the 1958 Agreement.

(b) *The registration plate(s) shall be retroreflecting. (Proposal from PRI)*

6.2.2.2.1.2 *Vision*

Motorcycles shall be equipped with at least one rear-view mirror.

6.2.2.2.1.3 *Protective devices and their use*

Motorcycles shall, by their construction, assure effective protection for the legs of the rider. *In particular, each passenger should be provided footrests. (Proposal from PRI)*

In addition, motorcycle operators and passengers should be encouraged to use the following protective equipment: motorcycle helmets; proper clothing, including gloves, boots, long trousers, and a durable long-sleeved jacket; and eye and face protection.

Proposal submitted by PRI

a) *The wearing of a protective helmet should be made obligatory in all circumstances (in open countryside or in urban environments) for riders of motorcycles and their passengers. Such helmets shall be subject to type approval.*

(b) *The wearing of protective clothing (boots, gloves, jacket and trousers, etc.) and of reflecting and fluorescent devices on the clothing, in particular when driving at night or in reduced visibility, shall be recommended and encouraged.*

6.2.2.2.1.4 *Trailers*

Where trailers are permitted by national legislation:

(a) Trailers shall be such that the performance of the combination ensures sufficient safety of operation (speed, visibility, braking).

(b) Trailers coupled to motorcycles must be fitted at the rear with a red reflecting device. If the red lamp of the motorcycle is hidden by the trailer and/or its load, a red lamp must be placed on the rear of the trailer.

Proposal from PRI

(a) Trailers must be made so as to ensure that the behaviour of the combination provides for safety of operation and in particular avoids any risk of turning over or imbalance (speed, visibility, braking, maximum authorized weight, etc.). National legislation should also draw up particular traffic rules to which such combinations could be subjected, in particular traffic restrictions or speed limits.

a. Trailers coupled to motorcycles shall be equipped at the rear with a red reflecting device.

(b) If the lamp at the rear of the motorcycle is hidden by the load of the trailer or by the trailer itself, the trailer shall be equipped with a red lamp at the rear.

(d) If the rear registration plate is hidden by the trailer or its load, a registration plate reproducing the registration number of the motorcycle shall be affixed at the rear of the trailer.

6.2.2.2.2 Rules concerning the use of motorcycles (3.6)

6.2.2.2.2.1 *Aptitudes required for drivers*

To obtain a motorcycle driving permit candidates should be required to pass both theoretical and practical tests after receiving appropriate instruction. Rider training for motorcycle permit candidates should be affordable and accessible; conducted within an agreed syllabus; and conducted by qualified, experienced instructors.

The use of high-performance motorcycles, as defined nationally/internationally, should be either:

- subject to meeting the requirements of a progressive permit system with appropriate training and experience on a lower performance motorcycle, or
- subject to minimum age requirements and training required to pass the appropriate level of test.

6.2.2.2.2.2 *Safety of motorcyclists*

Public information safety campaigns should be encouraged as they provide an opportunity to educate motorcycle riders, as well as other motorists and road users. Such programmes should address: daytime use of motorcycle headlights; brightly coloured clothing and reflective materials for motorcycle

riders and motorcycle helmets with high daytime and night time conspicuity; lane positioning of motorcycles to increase vehicle visibility; reasons why motorists do not see motorcycles; and, especially, ways that other motorists and road users can increase their awareness of motorcyclists.

As with other areas of road safety, law enforcement personnel play an important role in motorcycle safety. Enforcement of licensing, impaired driving laws and laws governing motorcycle operation is as important for two-wheeled vehicles as for four-wheeled vehicles. Law enforcement also has an important role in investigating and documenting motorcycle collisions, and permitting the data to be used to improve motorcycle safety.

Road traffic authorities should be aware of the needs of motorcyclists as road users and their particular characteristics and vulnerability. Policies should be developed regarding the design and the placing of road and roadside furniture, such as signs and lights and service covers and markings.

Governments may make it compulsory for motorcycle drivers to drive with the passing lamps or running lamps switched on in daylight.
